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AMERICAN SYSTEM OF EDUCATION.

FIRST THOUGHTS;

OR,

BEGINNING TO THINK.

"I thought as a child."—BIBLE.

"The child is father of the man."—WORDSWORTH.

BY

A Literary Association.

BOSTON:

FREDERICK PARKER, 35 WASHINGTON STREET,
AND 21 APPLETON BLOCK, LOWELL, MASS.

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The Children's Hospital
Oct. 24, 1853

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DR. WISDOM AND PROFESSOR CADMUS

ON

FIRST THOUGHTS.

Professor Cadmus sat in the study of Dr. Wisdom, one afternoon in the early part of Spring. The blue-birds had come. The maple was hanging out its scarlet tress; and the merry laugh of childhood was ringing on the lawn.

The Professor became silent, and mused for some time on what he saw and heard. He turned to the Doctor, and, in the most wistful manner, exclaimed:

"What would I not give for the thoughts of early childhood! THE FIRST THOUGHTS! It is vain to wish for such things!"

"Not altogether," said Dr. Wisdom. "A kind Providence assists the infirmities of man. We may renew ourselves in our offspring. On the pages of your Wilmer's memory the first thoughts of man are still moist with the freshness of Nature. Gather them, my dear Professor. Perhaps they will satisfy your wish. The exercise, at least, will be useful to your son."

"True," said Prof. Cadmus; "but many of the sweetest ones will hide away in the unconsciousness of childhood."

"Be it so," replied Dr. Wisdom. "Silence and darkness nurse young thoughts. If you could know all of infancy, perhaps you would neglect it. Its distance from us lends it a charm that touches all our sympathies."

"By the way," said the Doctor abruptly, "I have a new thought! Why do we not lead our children in systematic education back to the dawn of being? *Why not begin thinking with the first known thoughts of the mind?*"

"What do you say?" asked the Professor.

"Why not," said the Doctor, "begin systematic education with the first thoughts of the mind? Beginning with these, the line of thought would stretch itself out beautifully before us, inviting our steps into a course that would end with God. It would be so natural!"

"I like the suggestion," said Prof. Cadmus; "I like it very much. Occasionally, it has been brought before my own mind; but I have never entertained it long enough to give it a practical form."

Dr. Wisdom resumed: "It cannot be," said he, "that nature is purposeless in our early days. She does not leave childhood to the play of caprice. There is order here, and, if I am not mistaken, *the order that shapes our lives.* I wish it was laid open to young hearts in their first thoughts."

"So do I," added the Professor; "heartily do I wish it. But what would you include in such a work?"

"Nothing but the obvious," said Dr. Wisdom; "nothing *except what lies around the very door of life.* The child begins to think in SENSATION. From this, he goes forth to the world, but returns soon to self. He goes forth in excursions, like the flights of young eagles, stretching himself farther and farther into the world."

"Just so," said the Professor. "Such excursions are known to every observing parent. Sensation is the point of departure. If we regard it as a fount, you would sketch the meanderings of thought and feeling as they flow from it, and make their course in the world."

"Exactly so," said Dr. Wisdom. "I would recall the young thinker to the beginning of his life; and from it, lead him forth to *observe, name* and *classify* his first thoughts. I would pay particular attention to the SENSES, and every thing connected with our early knowledge."

"Would you give him," asked Prof. Cadmus, "any insight into his own being? Or, is it too dark for childhood?"

"Too dark!" exclaimed the Doctor. "Why should it be so? It seems to me that it is almost as easy to think about a *pain* as what produced it; and learn that joy and sorrow are within us, while rocks and trees are without us. Besides, it is the mind, as you know, my dear Cadmus, that shapes, colors and arranges all things. The sooner it can be known, the better it is for the hopes of education. I would lead the child to observe what is going on *within him* as well as without him. I would also wake up the sense of God, which stirs itself in the heart, when we think of the world and self."

"Admirable, my dear Doctor! I am impatient to see these things reduced to practice. Ah, there is the proof of philosophy! That which

works well is well. But you would illustrate first thoughts? That which finds admission to the soul through the eye is happily understood."

"Just so, my dear Cadmus. I would call to my aid the simple but instructive picture. In this case, however, it would be the meaning OUTLINE. The designer should teach much more than the engraver. If the drawing does not carry its lesson with it, no art of the engraver, printer or colorer can supply it. Besides, an outline is more readily understood; and since all first thoughts should lie near the senses, and be *drawn, if possible, by the pencil of the young thinker*, the outline is the only illustration that is admissible."

"Such beginnings of thought," said Professor Cadmus, "must be the seeds of knowledge. So I shall begin with Wilmer. The pencil shall be the companion of thought. The eye and touch shall fix the beginnings of knowledge deep in his young heart."

The Literary Association is happy in finding in these views a perfect accordance with their own. Coincidences are encouraging.

The Association has added another feature to the illustrations, which they regard as one of interest. The symbols of amusement accompany them. With this addition, they are, the Association thinks, admirably designed to teach the union of pleasure and study. Both features are so united as to show that thought is above play.

The illustrations, the Association would say in conclusion, are intentionally simple, and should, as far as possible, be drawn by the child.

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FIRST PART.

INTRODUCTION.

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THE BEGINNING.

INSTRUCTION I.

THE BEGINNING.

THE oldest things, my son, were once young. They had a beginning. There was a time when the earth began to bud and blossom. There was a time when the sun, and the moon, and the stars began to shine.

You, too, my son, had a beginning. Seven years ago, to-day, you began life. You began it with a *feeling of coldness.* Your CRY told us the air had touched your little body, and you were cold. *So* your life began.

How did your life begin?

INSTRUCTION II.

THE WORLD.

Look, my son, without you! What do you see? There is something around, beneath and above you. It is the WORLD. Look upon it. Look any where. What do you

see? A field? It is part of the world. Listen! Is it the whistling wind? It is part of the world. Stretch out your hand and touch any thing. It is part of the world.

Do you ask, my son, what is the world? Whatever you *touch*, *taste*, *smell*, *hear* and *see*. That—all that is the WORLD.

What is the world?

INSTRUCTION III.

I, MYSELF.

Look, my son, within you! There is something there; and it is not the world. It is more than your breath or your beating heart. It looks forth out of your eyes at the trees and clouds. It listens at the ear for the voice of the

winds and the song of the birds. It *thinks* of the broken toy.

What is it, my son, that looks forth out of your eyes? What is it that listens at the ear? It is I, myself. What is it that tastes the ripe peach? What is it that smells the rose? What is it that touches the snow, and says, it is cold? Is it I? It is I. And what is this I that touches, tastes, smells, hears and sees? It is I, myself. We will now give it a new name. It is the SOUL—that which *thinks*, *feels* and *acts*.

What is the soul? How is it seen in the above picture?

INSTRUCTION IV.

GOD.

Once more, my son, look without you? Look upon the world. Do you see all? When the trees bud, or the wind blows, or the sun sets, or the thunder rolls, or the night comes on, do you feel something else? It is not the world.

Look now within you. Do you see all? When you feel the cold, or taste the ripe fruit, or smell the lovely rose, or hear the storm, or see the rainbow, do you feel something else? It is not I.

And what is it? It is the MAKER of the world and me. It is GOD.

Who is God?

INSTRUCTION V.

FIRST THOUGHTS.

Life, my son, began with a feeling of coldness. At that time, you knew nothing. The sun was up, the winds were at play, the birds were singing, and a kind mother was looking into your face. But you saw nothing. You heard nothing. You only felt the *cold* or *warm* air.

Days passed on, and you only breathed, and nursed, and cried. But the world and God came to you. They came in the *colors*, and *sounds*, and *odors*, and *voices* that made your nursery glad. Slowly, you began to look at colors, listen to sounds and feel after things. You learned soon to

do more. You began to NOTICE and NAME and USE things. Such were your FIRST THOUGHTS. We will gather them up, and see what they mean.

But what is a thought, do you ask? *A thought is something known.* It may be a thought of the world, of the soul or of God.

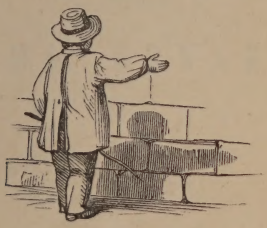
What were your first thoughts? What is a thought?

INSTRUCTION VI.

HOW WE BEGIN TO THINK.

Do you ask me, my son, what was your first thought? You ask me too much. God alone can tell your first thought.

I told you, my son, your first feeling. It was a sense of coldness. It was some time after that before you began to think. You began on this wise. You heard the name, papa. You heard and learned your own name, Wilmer. Soon after that, you began *to talk to yourself.* Wilmer is a good boy. I am. Get up, horse. Ho! So you began to think—you *began to think in talking to yourself.*



And now, Wilmer, let me tell you that I have often listened to you as you thought in this way. *Speech and thinking were the same.* To talk was to think; and to think, with you, then, was nothing more than to talk.

How did you begin to think?

SECOND PART.

THE SENSES.

THE SENSES.

INSTRUCTION VII.

THE FIVE SENSES.

My son has FIVE SENSES. Their names are *touch*, *taste*, *smell*, *hearing* and *sight*. Does he know what they were made for? Think, my son.

The senses are openings to let in the world to the soul. There is blind James. He sees no color. The opening is closed. Thomas hears no sound. He is deaf. The opening is closed. The senses are five links that connect the soul with the world.

How many senses have you? Name them. What are they?

INSTRUCTION VIII.

THE SENSE OF TOUCH.

The sense of touch, my son, is the first one that is used. As soon as you came into the world, the air acted upon it. You felt cold, and cried out in pain. So you began to live.

The sense of touch is found all over the body. It is found chiefly in *the ends of the fingers* and *lips*.

It is a useful sense. By it, we learn that things are *cold* or *warm; hard* or *soft; rough* or *smooth*. If we had no sense of touch, we would know nothing about cold rooms, hard seats, or smooth hands.

When is the sense of touch found? What do we learn by it?

I. EXERCISE.

1. Name something that is cold. Colder. The coldest thing you know.
2. Name something that is warm. Warmer. The warmest thing you know.
3. Name something hard. Something harder. The hardest thing you know.
4. Name something soft. Something softer. The softest thing you know.
5. Is a board rough? Is a rasp rougher? Is a grater still rougher?
6. Is the table smooth? Is the wall smoother? Is the paper the smoothest?

II. EXERCISE.

When is a thing cold? Warm? Hard? Soft? Rough? Smooth?

INSTRUCTION IX.

THE SENSE OF TASTE.

The sense of taste is very much like the sense of touch. It is found only in *the tongue.*

It is a useful sense. By it, we learn the FLAVORS of things. We learn that they are *sweet*, or *tart*, or *sour*, or

bitter, or *salt*. If you had no sense of taste, you would not know that sugar is sweet, and a pickle is sour.

What do we learn by taste?

I. EXERCISE.

1. Name something sweet. Sweeter. The sweetest thing you know.
2. Name something tart. Tarter. The tartest thing you know.
3. Name a sour apple. Something sourer. Something very sour.
4. What is salt? Something salter?
5. Name something fresh.
6. What taste has water?

II. EXERCISE.

When is a thing sweet? Tart? Sour? Bitter? Salt?

INSTRUCTION X.

THE SENSE OF SMELL.

The sense of smell is found only in the *inside of the nose*. It gives us much pleasure. Think of flowers and hay-time.

The sense of smell gives us the ODORS of things. If we had no such sense, the weed would smell as sweet as the rose; the city as fresh as the country. You would know no difference.

What do we learn by the sense of smell?

I. EXERCISE.

1. Name some odors that you like.

2. Name some that are weak and some that are very strong.

3. Tell me what you know of the odors of some fruits. Some vegetables. Some meats.

II. EXERCISE.

What is sour? Fresh? Sweet? Sweeter? Stale? Musty?

INSTRUCTION XI.

THE SENSE OF HEARING.

The sense of hearing was first touched by your mother's voice. Since then, many sounds have fallen upon it. The rattle, the whistle, the piano, the wind and the thunder and many other things have been heard.

The sense of hearing is confined to *the ear*.

By it, we learn the SOUNDS of things. The deaf have not this sense. They know nothing of sound. There is neither voice nor sound for them,—no wornds of love,—music.

What does hearing give us?

I. EXERCISE.

1. Name something that makes a low sound. A high sound.
2. What makes a loud sound? A soft sound?
3. Name something that makes a long sound. A short sound.
4. Does the cricket make a sharp sound? Does the duck make a flat one?

II. EXERCISE.

1. Sound the vowels, a, e, i, o, u, low, high; soft, loud; long, short; flat and sharp.
2. Sound the consonants in the same way.
3. Sound also the words, low, high, soothe, sharp.

INSTRUCTION XII.

THE SENSE OF SIGHT.

The sense of sight, my son, is a noble one. Think of all you see, and all the joy you feel by seeing.

The sense of sight is placed in the eye. It gives us LIGHT and COLORS.

The blind have not this sense. The world is dark to them. It is always night. They know nothing of the colors that please us so much.

What does the sense of sight give us?

I. EXERCISE.

1. Name flowers that are red. Different kinds of red.
2. Name blue flowers. Any thing else that is blue.
3. Name yellow flowers. Any thing else that is yellow.
4. Name something that is green.
5. What is of an orange color?
6. What is of a purple color?
7. What is of a violet color?

II. EXERCISE.

Name different *shades* of each of the colors named above—red, orange, yellow, blue, green, purple, and violet.

INSTRUCTION XIII.

THE UNION OF THE SENSES.

The senses, at first, are used one by one. You saw, for instance, the new toy, and you heard its sound like the bark of a dog; and afterwards you touched it. One sense was used at a time. Again, you touched, heard, and saw it at once. These three senses were united.

The senses, my son, can be united; and you can learn more than one thing at a time of what is without you. The five senses may be open. You may *touch*, *taste*, *smell*, *hear*, and *see*, at the same time.

EXERCISE.

What senses can you unite in learning something about a piano? A rose? A storm? An apple?

INSTRUCTION XIV.

TOUCH AND SIGHT.

The sense of touch and sight, my son, unite very easily. Their union is useful. You would know little without it.

By the union of the sense of touch and sight, we learn the *forms*, *positions*, *distances*, and *size* of things.

EXERCISE.

1. Name some things, and tell their forms.
2. Name some objects, and tell their positions.
3. Name some bodies, and tell their sizes.

INSTRUCTION XV.

TOUCH AND HEARING.

Touch and hearing were united very early in life. The tongue, teeth, palate, and lips, touched one another in

speaking. The ear guided them as they touched. The fingers touch the keys of the piano, and the ear guides us in making the sounds.

The union of touch and hearing gives us a knowledge of *hard* or *soft*, *rough* or *smooth*, voices and sounds.

I. EXERCISE.

1. Name some things that make hard sounds. Soft sounds.
2. Name some voices that are rough. Some that are smooth.

II. EXERCISE.

1. Sound the vowels, *a*, *e*, *i*, *o*, *u*, in a hard voice. Soft. Rough. Smooth.
2. Sound the consonants in the same way.

INSTRUCTION XVI.

SMELL, TOUCH, AND TASTE.

These three senses are commonly united in eating and drinking. Take, for instance, ice-cream. We learn from the sense of smell that it is *fragrant with lemon*, touch gives us its *coldness*, *softness*, and *smoothness*, and taste gives us its *flavors*, which are those of cream and lemon. You see, my son, that the union of these three senses is useful. It is a pleasant thing.

EXERCISE.

1. What do you learn of an orange by these three senses?
2. What of strawberries?
3. What of new milk?

INSTRUCTION XVII.

HEARING AND SEEING.

The senses of hearing and seeing are very often united. Their union affords us great pleasure.

An instance or two will make this plain. We go forth

into the fields. Sight gives us the *colors* of the trees, and hearing gives us the *sounds* of the winds and birds. We see the *dark* cloud and *red lightning*, and hear the *loud thunder*. We learn by the sense of sight that there is a smile on the face, and by the sense of hearing that kind words fall from the lips of our mother.

EXERCISE.

1. What does the union of hearing and sight teach you about a waterfall?
2. What, about a singing robin?
3. What, about the rain?

INSTRUCTION XVIII.

THE UNION OF ALL THE SENSES.

The senses, I have told you, my son, are openings of knowledge. They let in the world upon the soul. Why can they not be all open at the same time? Why may not the world come in at every sense?

It may do so. A child is playing on the lawn. Around, beneath, and above him is the world. He learns something of it at the same time from all the senses. He learns from TOUCH that the air is *warm and soft;* from SMELL, that the hay and flowers are *fragrant;* from HEARING, that the brook and birds and scythe are making *cheerful sounds;* and from SIGHT, that the clouds and trees and fields wear rich *colors*. He also learns much about their *forms*, *positions*, *distances*, and *magnitude*, or size.

All the senses are united in this scene, except taste, and it is partly in use.

EXERCISE.

1. What senses are united when you hear music?
2. What senses are united when you walk in the woods?
3. What senses are united when you walk in a city?
4. What senses are united in eating? and what does each sense give you?

THIRD PART.

ORGAN OF VOICE.

THE ORGAN OF VOICE.

INSTRUCTION XIX.

THE VOICE.

Voice, my son, is one of the most wonderful things in the world. It does not belong to all creatures. Birds, frogs and animals that nurse their young, alone have voice.

Man has it in the highest degree. He forms it into language, and tells all he thinks and feels.

He forms it into song, and pleases us with rich music.

Voice is living sound. There is no sound in the world so great and useful and beautiful. It is made out of the air. Strange thought!

What is voice? Of what is it made?

INSTRUCTION XX.

THE AIR.

The air, my son, is a light, springy, fluid body. It sur rounds us and the world on every side. It extends to the height of fifty miles above the earth.

There could be no sound without the air. If the air was taken out of a glass vessel and a bell rung in it, you would see the bell trembling, but you would hear no sound.

There would be no voice without the air. If you talk fast for some time, you have to stop. The air in your chest is wasted, and you can make no sound.

The air is the material of voice. It carries our words to each other. The air is made into voice by the organs of voice.

What is the air to voice? What does it do for sound?

INSTRUCTION XXI.

THE LUNGS.

The air, my son, I have told you, is the material out of which voice is made. We take it into our chest, when we breathe. It enters the lungs.

The lungs are two bag-like vessels composed of very fine cells. The air is forced out of these cells, when we speak and sing. So the lungs, in making voice, are like a pair of bellows.

What are the lungs?

EXERCISE.

1. Try to fill and empty the lungs *slowly, quickly,* and empty them *explosively,* which is like coughing. Do this without making any sound.
2. Fill the lungs as above, and empty them, making a sound.

INSTRUCTION XXII.

THE WIND-PIPE.

The air, my son, is taken into the lungs and expelled from them through a tube, called the wind-pipe. You can feel it in the front part of your neck.

The wind-pipe is the tube through which air passes to and from the lungs. It is composed of rings, and can be shortened or lengthened. It is connected with the lungs by two branch-tubes, called the bronchial tubes.

What is the wind-pipe?

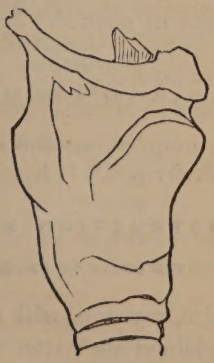
EXERCISE.

Stand erect and sound A, E, I, O, U. Do the same with the head bent forward. You see it is best to keep up the head when we speak or read.

INSTRUCTION XXIII.

THE LARYNX.

The top of the wind-pipe is very much like the top of a clarionet. It is called the *larynx*, which means a *whistle.* If you examine the wind-pipe of a fowl, you will be able to understand what I have said about it.



The larynx is a box-like organ in which the voice is made. Would you like to know how?

Within the larynx, there is a very thin membrane like tissue-paper. There is a slit or opening in it. When we force the air out of the lungs, it rushes through this opening, as when we blow into a flute. It also strikes against the sides of the opening, as when we touch the strings of a violin. Voice is made, and is *both a wind tone and a stringed tone.* There is no other like it in the world.

What is the larnyx?

EXERCISE.

1. Sound the vowels, a, e, i, o, u, and see where the sound is made.

2. Sound them *slowly, quickly, feebly, strongly,* and attend to the feeling in the larynx and the kind of sounds.

INSTRUCTION XXIV.

THE MOUTH.

The mouth, my son, includes the throat, tongue, palate, teeth and lips. None of these produce voice. All voice, as I have told you, is formed in the larynx. The throat, tongue, palate, teeth and lips change it in *some* way, and give us a great variety of sounds.

EXERCISE.

1. Sound the vowels, a, e, i, o, u, and attend to the place where the sounds are made.

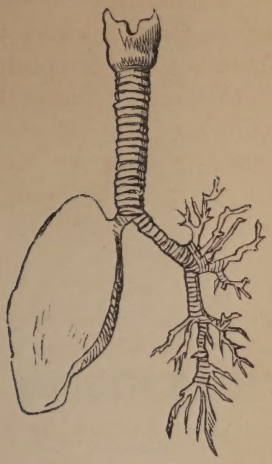
2. Sound the following groups of consonants and observe their places: k, g, q; l, r, n; d, t; s, z, sh, ch; p, b, v, f; h.

INSTRUCTION XXV.

THE ORGAN OF VOICE.

The organ of voice, my son, will now be easily understood. I have explained its parts. Let us put them to

gether. The lungs, bronchial tubes, wind-pipe and larynx.



These form the organ of voice. The mouth, with its tongue, teeth, palate and lips, completes it.

The organ of voice, as thus explained, *is a speaking and singing instrument.* We make speech or song with it, by playing upon it in the right way, with the air.

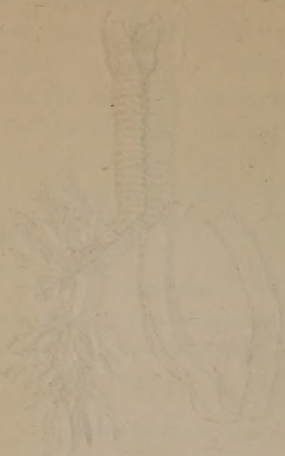
In making sounds upon it, remember, my son, that you can have a scale of sounds. The *deep* and *low* voices are formed in the chest. They become higher and higher as we ascend into the throat, along the palate and up to the teeth. Remember this, my son.

What is the organ of voice?

EXERCISE.

1. Sound AW, as deep in the chest as you can, then *ah* in the throat, A somewhat higher, *en*, and then *e*. You see how they become higher and higher.

2. Sound the GLIDING *z*, HISSING *s*, CRUSHING *sh* and *ch*, SOFT *b*, *d*; SHARP *t*, *p*; ROLLING *r* and *l*, and echoing *n*, *ng* and *m*. You see that the air is made to pass out in various ways.



FOURTH PART.

BODIES.

BODIES.

INSTRUCTION XXVI.

BODIES.

The five senses, my son, are acted upon by things without us. You know this. The sun sends his light to the eye,

winds and brooks and birds send their sounds to the ear,

and the odors of flowers and fruit act upon the sense of smell. The senses are acted upon by bodies.

A body is any thing that can be known by the senses. It may be a tree, a star or a pen.

What is a body?

EXERCISE

1. Name some bodies.

2. Name some bodies that you know by the sense of touch. By the sense of taste. By the sense of smell. By the sense of hearing. By the sense of sight.

INSTRUCTION XXVII.

OBJECTS.

There are many bodies about us, my son, at all times. Only some of them are observed. When I am reading, for instance, I do not attend to the wind; when I am smelling the rose, I am not thinking about the sun, who is shining upon me. As soon as we observe a body, it becomes an object.

An object is any thing that we NOTICE *by the senses.* Your book is now an object, for I am noticing it by the sense of sight.

What is an object?

EXERCISE.

1. With what sense do you notice the following objects; an apple, a cloud, the sun, a book, a spade, a man?

INSTRUCTION XXVIII.

KINDS OF BODIES.

The bodies which are around you, my son, are not all the same. The rock is not a tree, and a saw is not an animal. There are different kinds of bodies.

All bodies may be divided into two classes: NATURAL and ARTIFICIAL.

A natural body is any thing made by the Creator, and which can be known by the senses. A flower, a bird, or a pond is a natural body.

An artificial body is any thing made by man, and which can be known by the senses. A house, a carriage, or a hammer is an artificial body.

What is a natural body? An artificial body?

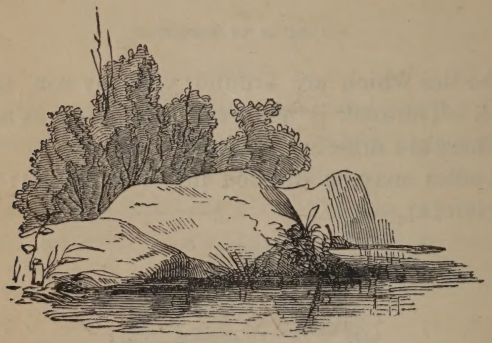
EXERCISE.

1. Name some natural bodies, and the senses by which you know them.
2. Name some artificial bodies, and the senses by which they are known.

INSTRUCTION XXIX.

A MINERAL BODY.

There are a great many bodies, my son, that neither grow nor live. They have no difference of parts. These are mineral bodies. Some of them are very useful, as, water, rocks.



A mineral body is one that has no difference of parts. It is all the same. Such are rocks, metals, water, the air. Name the mineral bodies in the above picture.

What is a mineral body?

EXERCISE.

1. Name some mineral bodies, and state what you know about them.
2. By what senses do you know them?

INSTRUCTION XXX.

A VEGETABLE BODY.

You know, my son, many bodies that grow. They spring up from a seed or cutting. Such are all plants—

the flowers of our garden, and the trees of the wood. These are vegetable bodies.

A vegetable body is one that grows. It has a difference of parts, as the root, stem, branches, leaves, and flowers.

Point out the vegetable bodies and their parts in the above picture.

What is a vegetable body?

EXERCISE.

1. Name some vegetable bodies, and tell me what you know about them.
2. By what senses do you know any thing about a *rose*, a lily, a pine tree, or a melon vine?

INSTRUCTION XXXI.

AN ANIMAL BODY.

My son knows some bodies that do more than grow. They live and take notice of things. Such are flies, birds, butterflies, and all animals. These are animal bodies.

An animal body is one that lives and takes notice of things. It has a difference of parts, as the limbs, body, senses: it grows, lives, and observes any thing that comes near it. Such is the butterfly.

What is an animal body?

EXERCISE.

1. Name some animal bodies, and tell me what you know about them.
2. By what senses do you know any thing of the cat, dog, horse, locust, and spider?

INSTRUCTION XXXII.

INSTRUMENTS.

There are many things without us, my son, beside mineral, vegetable, and animal bodies. What does the blacksmith and carpenter and farmer work with? Instruments. These, too, are bodies. With what does the musician make music? With an instrument.

An instrument is a tool with which something is done. Such is a saw, or hammer, or spade.

What is an instrument?

EXERCISE.

1. Name the instruments of the farmer. Mason. Carpenter. Cooper. Blacksmith. Saddler. Shoemaker. Hatter. Tailor. Carriage-maker. Ship-builder. Printer. Book-binder. Painter.

2. What senses are used in knowing all about instruments?

INSTRUCTION XXXIII.

WORKS OF MAN.

Man, my son, is an active being. He is ever at work. The farmer is in the field, the carpenter is in his shop, and the painter is in his study. Instruments are busy, and many things are made. These are the works of man. Such is the house.

A work of man is any thing made by the use of instruments. A house, picture, or chair, is a work of man.

What is a work of man?

EXERCISE.

1. Who is the maker of the following works: A crop of corn, a wall, house, tub, horse-shoe, saddle, boot, hat, coat, coach, ship, book, pictures?

2. With what instruments were each of these works made?

INSTRUCTION XXXIV.

PLACE.

When you think of bodies, my son, do you think of any

thing else? Think now of a book. Where is it? Think of your hoop, ball, and chair. Where are they? You think of PLACE also. Whenever you think of any body, the place where it is, comes up before your mind. There is a place for it.

Place is where any thing is. The sun, moon, and stars have their places in the heavens; minerals, plants, and animals have their places on the earth.

What is place?

EXERCISE.

1. Name some places, and tell me what is in them.
2. Do the senses help you to know places?
3. How do you know any thing about places which you have not seen?

INSTRUCTION XXXV.

AGENTS.

All the bodies, my son, that I have told you about, are active. The water is flowing, the air is in motion, trees

are bearing fruit, and the birds are singing. They are all doing something. When a body does any thing, it becomes an AGENT. A volcano is an instance.

An agent is that which does any thing. The rain is watering the earth; the horse is drawing the plough.

What is an agent?

EXERCISE.

1. Name some agents, and tell me what they do.
2. Name some mineral, vegetable, and animal agents.

INSTRUCTION XXXVI.

EVENTS.

All things are busy, my son. So are you. They are agents, and do something. We call what they do, EVENTS.

An event is any thing that happens. Such are the budding of a tree, rising in the morning, eating your breakfast, a storm, and the arrival of an aunt.

What is an event?

EXERCISE.

1. Name some events, and tell me what you know about them.
2. Name some mineral, vegetable, and animal events.
3. By what senses do you know that it rains? snows? night? spring?

INSTRUCTION XXXVII.

TIME.

When you think of an event, my son, is that all? Your aunt has arrived. Do you ask, *When?* The old willow tree was blown down. Do you ask, *At what time?* O, yes! You think of the TIME, when you think of the event.

Time is the place of events. It is WHEN they happen, and HOW LONG they last. The storm, last night, began at eight o'clock, and lasted till morning.

What is time?

EXERCISE.

1. Name some times, and tell me what you know about them.
2. How do we find out the time?
3. Do the senses tell you any thing about time? Does the soul?

FIFTH PART.

PROPERTIES OF BODIES.

PROPERTIES OF BODIES.

INSTRUCTION XXXVIII.

PROPERTIES.

You know, my son, a great many things about a great many bodies. You know, for instance, something of the color, shape, size and place of the sun. These are some of his properties. You know some of the properties of fire.

A property is that which belongs to a body, and by which it is known. Fire is known chiefly by its color and warmth.

What is a property?

EXERCISE.

1. Name some properties and what they belong to.
2. Name some properties of a *stone*, *apple* and *flower*, and the senses by which you know them.

INSTRUCTION XXXIX.

SENSIBLE PROPERTIES.

Bodies, as I have told you, my son, act upon the senses. In this way, they are known. The rose, for instance, acts upon the sense of smell and sight. What we learn of it, or any other body in this way, we call SENSIBLE PROPERTIES.

A sensible property is that which we know of bodies by the senses. Sensible properties are few in number. They are cold and warm; hard and soft; rough and smooth; flavors, odors, sounds, colors, form, size and position.

What is a sensible property?

EXERCISE.

1. Name the sensible properties of a *pencil, knife, fire.*
2. What are the sensible properties of *sugar, tea* and *milk*, and by what senses do you know them?
3. Name all the sensible properties of bodies.

INSTRUCTION XL.

PROPERTIES WHICH ARE NOT SENSIBLE.

There is more, my son, in bodies than you know by the senses. When you see the lightning, hear the storm, look out into the dark night or look at a flowing brook, you feel more than you see or hear. When you look at a picture, you feel more than you see. You feel something of the painter, and wish that you could paint like him.

Thus, my son, you have learned that there are properties, which are not sensible. I will tell you something about some of them.

INSTRUCTION XLI.

EXISTENCE.

Very early in life, you felt there was something without you. The hand was stretched out to the candle. You also felt there was something within you. Instead of Willie, you said I and me. This I, you remember, we called the soul. The existence of yourself and the world was known. You made a difference between what was without and what was within you. This you did, not by the senses, but by the mind. In this way, you learned existence.

Existence is being. It is something as opposed to nothing; life as opposed to death; that which is real, as a pain, as opposed to what we imagine, as a ghost.

What is existence?

EXERCISE.

Point out some things that exist, and tell how you know that they do.

INSTRUCTION XLII.

ORDER.

My son, long before to-day, has seen that bodies are placed in a certain way. Each one has its own place. Fish

are not found on land; horses are not found in water. There is a place for every thing, and every thing is in its place. When bodies grow, live or act, it is all done in a certain way. There is a season for every thing. Day follows night, summer succeeds spring, and the fruit comes after the blossom. This, we call order in place and time.

Order is a wise and pleasing disposition of things. It is seen in the seasons, the arrangement of plants and animals upon the earth.

What is order?

EXERCISE.

Give some instances of order in the world. Some in the family. Some in the state. Some in the church. Some in your own life.

INSTRUCTION XLIII.

RESEMBLANCE.

There is a likeness, my son, in bodies. This you have noticed long ago. You have noticed it in the sun, moon and stars; in the lilies of the garden: also in the faces of men. You have noticed a resemblance and were pleased to do so. It is seen in the face of a mother and daughter.

Resemblance is an agreement between bodies in some of their properties. The moon resembles the sun in form, color and in giving light.

What is resemblance?

EXERCISE.

Point out the resemblance between a carriage and a rail-road car. A knife and a chisel. The sleep of a bird and its death.

INSTRUCTION XLIV.

POWER.

All the bodies about you, my son, are active. They do something. The earth nourishes plants, the grass feeds the cow, the birds sing in the grove, and the water turns the wheel of the old mill. They do so because they have power. The lightning is an instance.

Power is that on which an event depends. The boiling of the kettle is an event, and depends on the *heat* of the fire. The whirling of the hoop is an event, and depends upon your will and the *strength* of your arm.

What is power?

EXERCISE.

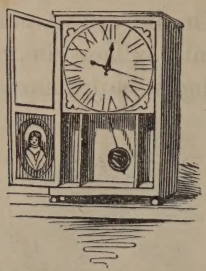
1. Give me some instances of power.

2. Name some things that have much power; some things that have little power.

INSTRUCTION XLIV.

MOTION.

Do you know any thing, my son, that stands still? Nothing. Look above. The heavens are moving. Look about you on the earth. Plants and animals are in motion. The earth itself, on which we live, is moving. So is the pendulum of the clock on the mantel-piece.



Motion is active power. It is easily known as a change of place. This is seen when you lift your hand, or engage in the exercise of walking. There is a change of place, there is active power. It is seen in the hands and pendulum of a clock.

What is motion?

EXERCISE.

1. Name some motions.
2. Name some *quick, slow* and *pleasiug* motions.

INSTRUCTION XLVI.

BEAUTY.

There is something, my son, in the bodies about us which gives us pleasure. We are pleased with certain odors, and sounds, and colors, and forms. Often have I seen you

smile before the violet. Often have I heard you clap your hands to the rising moon. What did you see and feel? Beauty. It is seen in wave lines, flowing forms and lovely expression.

Beauty is that which is fair to the heart. It awakes a sweet, fine and free feeling within us, and leads us to think of something fairer than all that we see or hear. It is found

in the walks of life. It may be seen in FORM, in COLORS, in SOUNDS, in MOTION, and in EXPRESSION.

What is beauty?

EXERCISE.

1. Name some things which are beautiful.
2. Observe by what sense their beauty comes to the heart.
3. Point out beauty of form. Of color. Of sound. Of motion. Of expression.

SIXTH PART.

PROPERTIES OF BODIES—SOUND.

PROPERTIES OF BODIES.

INSTRUCTION XLVII.

SOUND.

Sound, my son, is a well-known thing. It came to you in the dawn of life. It dropt from your mother's lips into your young heart—dropt sweetly. I will tell you what it is. Sound, my son, is something within you. It is not in the bell.

If you touch the string of the piano gently, or any other tight string, you can feel and see its *tremblings*. If you touch it quickly, and with some force, you can hear them. This we call sound.

Sound is a sensation produced by the tremblings of bodies. Those bodies that produce it, are called sounding bodies.

The organs of speech or a string of a violin is a sounding body.

What is sound?

EXERCISE.

1. Name some sounding bodies.
2. Name some more, and tell what makes them produce sounds.

INSTRUCTION XLVIII.

TONE.

The sounds, my son, which we hear from time to time are numberless. You could not count them. Think of the sounds of winds, storms, cows, horses, crickets, frogs, locusts and birds. Some of these sounds are very pleasing. These we call tones.

A tone is a measured re-sounding sound. We hear tones in song and the music of the piano: we hear them also in nice speech.

What is tone?

EXERCISE.

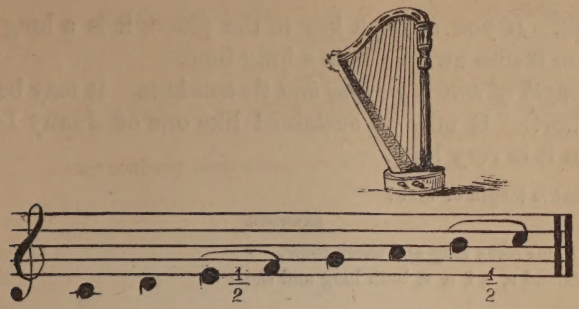
1. Name some things that produce *tones*, and tell what you know about them.

INSTRUCTION XLIX.

PITCH.

When we listen to the wind, the song of birds, or the voice in speaking, some of the tones are high and others are low. This is called pitch.

Pitch is height of tone. I have heard it rise and swell to heaven, and then descend and die away to a whisper. Pitch, force and length of tones may be seen in the strings of a harp, and the notes of a musical staff.



What is pitch?

EXERCISE.

1. Name some things that produce *high* tones. Also *low* ones.
2. Sound a, e, i, o, u, both high and low.

INSTRUCTION L.

FORCE.

If we attend to the tones that fall upon the ear when we are in the field, or by the fireside, we will feel that some of them are *strong*, and others *weak*. The thunder and the whispering wind are instances. So is the father's voice when he calls back his son, and the mother when she sings her babe to sleep. There is force in different degrees.

Force is power, or strength of tone. It may rise from a whisper to a shout.

What is force of tone?

EXERCISE.

1. Name things that have different degrees of force in their tones.
2. Sound the words *low, soft, strong, power* and *shout* in different degrees of force.

INSTRUCTION LI.

LENGTH OF TONES.

If we listen to a woodpecker, my son, its tap, tap is very

quick. If you strike a key of the piano, it is a long time before it dies away. It is a long tone.

Length of tone is the time that the tone lasts. It may be long or short. It may be sustained like one of Jenny Lind's. Then it is very long.

What is length of tone?

EXERCISE.

1. Name some long and short tones.
2. Sound a, e, i, o, u, both long and short

INSTRUCTION LII.

FLAT AND SHARP TONES.

If you listen, my son, to the tick of a clock, it is the same. It neither rises nor falls. If you listen to the cawing of a rook, it falls; if you attend to the notes of a canary, they rise. The tick of the clock, and the caw of the rook, sound blunt and grave. The note of the canary sounds keen and lively. The one is grave: the other is sharp.

A flat tone is one that falls and sounds blunt. It is heard when we say *yes* or *no.*

A sharp tone is one that rises and sounds keen. It is heard in asking the question, Will you go to town to-day?

What is a flat tone? What is a sharp tone?

EXERCISE.

1. Name some flat and some sharp sounds.
2. Sound b, d, v, and p, t, f, and notice which letters are flat and which are sharp.

SEVENTH PART.

PROPERTIES OF BODIES—LIGHT AND COLORS.

PROPERTIES OF BODIES.

INSTRUCTION LIII.

LIGHT.

Light, my son, was not the first thing that you felt in this world. Coldness and warmth came before it. It soon followed them, however, and was very pleasant to the eye.

I will now tell you something about light. You are not able to understand all about it.

Light is that which makes things visible. It is the property of some bodies, as the sun. It is known to us in colors.

What is light?

EXERCISE.

1. Name some bodies to which light belongs.

2. Name some degrees of light; as, dim, soft, strong, bright, brilliant, cloudy, white, yellow, and blue.

INSTRUCTION LIV.

COLORS.

Color is pleasing to the eye, and gives us much pleasure. Think of the green fields, and the flowers that cluster here and there as beautiful ornaments.

It is found in great variety. And what do you think it

is? *Color is a kind of light.* It is so in the same sense that tone is a kind of sound. As such, blue color makes things appear blue: red color makes things appear red. The lily, for instance, is white, because it throws off white light to the eye .

What is color?

EXERCISE.

1. Name some colors.
2. Name some things, and their colors.

INSTRUCTION LV.

THE SIMPLE COLORS.

There are not as many kinds of colors, my son, as you think. If you look on the face of the sky, or the wood, or the flower garden, you are ready to ask, Who can count the colors that I see?

There are only three simple colors. These are RED, YELLOW, and BLUE. Red is *warm*, yellow is *brilliant*, and blue is *cold*. Out of these three, all other colors are made; as out of the twenty-six letters of the alphabet all words are formed.

What are the simple colors?

EXERCISE.

1. Name things that are red, and tell what feeling they produce. Do the same with yellow objects. Also with blue.

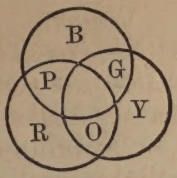
INSTRUCTION LVI.

COMPOUND COLORS.

My son is always happy with his box of colors. Now, suppose you had only the three simple colors, red, yellow, and blue, how would you make all the others? I will tell you, my son.

GREEN is made of yellow and blue.

ORANGE is made of yellow and red.
PURPLE is made of blue and red.



OLIVE is composed of yellow, blue, and red.
BROWN is composed of blue, red, and yellow.
SLATE is made of yellow, blue, and red.

These are the chief colors that are made of red, blue, and yellow. They are seen in the crossing of the three circles which mark the three simple colors—red, blue, and yellow.

What are compound colors? How are they made?

EXERCISE.

1. Name objects that are green. Orange. Purple. Olive. Brown. Slate.
2. Tell what simple color prevails most in each.

INSTRUCTION LVII.

THE COLORS OF THE RAINBOW.

The rainbow, my son, makes almost every one glad.

"My heart leaps up when I behold
A rainbow in the sky."

It is the shape of the bow, and the colors with which it is made, that please children. It is a bow of colors. They are seven in number.

RED.
ORANGE.
YELLOW.
GREEN.

BLUE.
INDIGO.
VIOLET.

The red, yellow, and blue, you know, are simple colors: the green, orange, and violet, are compound ones. Indigo is a kind of blue: violet is a kind of purple.

These seven colors are known as the colors of the rainbow. They are also called prismatic colors.

Name the colors of the rainbow.

EXERCISE.

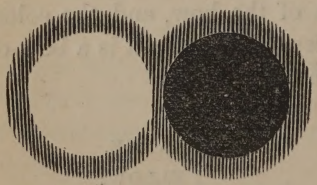
1. Name objects of each of the seven colors.
2. Name some objects that have other colors.
3. Try, and see if you can tell the simple colors out of which they are made.

INSTRUCTION LVIII.

WHITE AND BLACK.

Remember, my son, that color is a kind of light. Remember also that all things are the color of the light that they throw off to the eye. Your lips are red, because they throw off red light.

When, do you think, is a thing white? When it throws off white light. Just so. But white light, my son, is made up of all others. The light of the sun is white; but when it passes through a glass, called a prism, it is divided into the seven colors of the rainbow.



A white object is one that throws off all the light to the eye.

A black object is just the opposite. Black is no color. It is the absence of all color, or light.

A black object is one that throws off no light. It is visible, because we see the things that are around it.

EXERCISE.

1. Name some white objects. Also some black ones.
2. Tell me why an object is white. Why another is black.

EIGHTH PART.

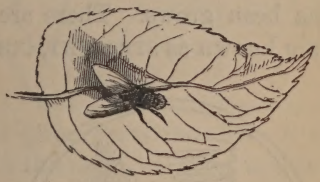
PROPERTIES OF BODIES—FORM.

PROPERTIES OF BODIES.

INSTRUCTION LIX.

FORM.

Form, my son, is a well-known thing. You have observed it in the tools of the farm and workshop; also in trees, flowers, and animals.



Form is the outline or shape of a body. It was first known by the sense of touch. Now it is known chiefly by the sense of sight.

What is form?

EXERCISE.

Point out some forms, and name them.

INSTRUCTION LX.

POINT, LINE, SURFACE, AND SOLID.

You have often used the words, point, line, surface, and solid. What do they mean? They belong to form.

A point is position.

A line is the distance between two points.

A surface is the distance or space between lines. The face of the table is a surface.

A solid is the distance or space between surfaces. The desk or piano is a solid.

What is a point? Line? Surface? Solid?

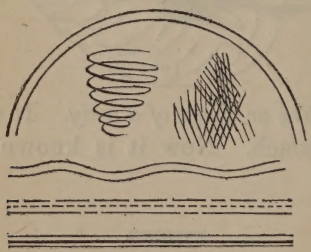
EXERCISE.

Point out a point, line, surface, and solid, in the works of man, and also in the works of God.

INSTRUCTION LXI.

KINDS OF LINES.

All lines, my son, are not the same. The line that borders the plate differs from that which borders the table. The line in which the bird flies is not the same as the line in which the Lima bean grows. There are different kinds of lines. They are known as STRAIGHT, CURVE, WAVE, and SPIRAL.



A straight line is the shortest distance between two points. You may see it in the side of a book.

A curve line is one that bends at every point. It can be traced in a hoop.

A wave line is one that bends at every point for a certain distance in one direction, and then in the opposite. It is seen in waving grain, or waves of water.

A spiral line is one that bends windingly. It is seen in climbing vines.

What is a straight line? Curve line? Wave line? Spiral line?

EXERCISE.

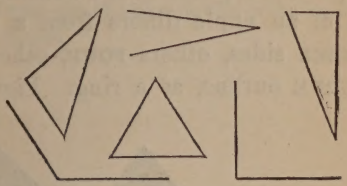
1. Point out these different kinds of lines in the works of man and of God.

2. Draw them.

INSTRUCTION LXII.

ANGLES.

You ought, my son, to know something about angles. You meet them every where. If two lines, or two surfaces meet, they form an angle.



An angle is the space between two lines or surfaces that meet. You can see it in the panes of glass, and the corners of the room.

What is an angle?

EXERCISE.

1. Point out *angles* in the bodies around you.
2. Make various *angles*, and learn their names.

INSTRUCTION LXIII.

FIGURES.

The various shapes, my son, which you know and see, we call figures. I will tell you something about them.

A figure is any enclosed space. Such is the face of the table, or a book.

A plane figure is a space enclosed by lines. The *side* of a door, or the *face* of a slate, is a plane figure.

A solid figure is a space enclosed by surfaces. Such a figure is seen in an apple or a sugar-loaf.

What is a figure? A plane figure? A solid figure?

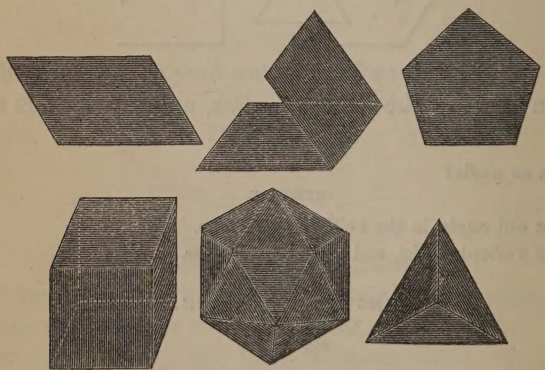
EXERCISE.

Point out some figures, and tell whether they are *plane* or *solid.*

INSTRUCTION LXIV.

KINDS OF FIGURES.

You know, my son, that figures are not all of the same kind. The shape of the gable of the house differs from its side: the form of an apple differs from a hoop. Some figures have THREE sides, others FOUR, others MANY, and others still a CURVE outline, as a ring. Figures are plane or solid.



A triangle is a plane figure that has three sides and three angles.

A four-sided figure is one that has four sides and four angles. It may be a square or rectangle.

A polygon is a plane figure that has more than four equal sides and angles.

A circle is a plane figure, every point of its outline being equally distant from the centre. A hoop, or a ring, is an instance.

A globe, or sphere, is a solid figure, every part of whose surface is equally distant from the centre. A ball is an instance.

A cube is a solid figure having six equal sides; as a die.

A cone is a solid figure, having a circular base, and a round surface tapering to a point. A sugar-loaf is a cone.

What is a triangle? Four-sided figure? Polygon? Circle? Globe? Cube? Cone?

EXERCISE.

1. Point out, if you can, all these figures in the bodies about you.
2. Draw these figures.

NINTH PART.

PROPERTIES OF BODIES—QUANTITY.

PROPERTIES OF BODIES.

INSTRUCTION LXV

QUANTITY.

Little things, my son, were pleasing to you when a babe. You like them still. Great or large things made you afraid. Why was this? You felt their quantity.

And what is quantity? It is the answer to the question, *How much?* So MUCH. *Quantity is that which can be measured.* As such, it may be a line, a triangle, or any body about us. It may be found by weighing.

What is quantity?

EXERCISE.

1. Give me some examples of body.
2. Can these be measured? How? How much are they?

INSTRUCTION LXVI.

MEASURES OF QUANTITY.

The carpenter and mason, my son, have their RULES; the milkman has his *quart*, and the storekeeper, his *weights*. What do they do with them? They measure bodies with them. The carpenter measures timber; the milkman, milk; and the storekeeper, tea and sugar. They wish to

find out the quantity of these things. It is done by using a measure, or weights.

A measure is a single thing of the same kind. We measure inches by an inch; cents, by a cent. In this case, the inch and the cent are single things of the same kind as that which we measure.

What is a measure?

EXERCISE.

How would you find the quantity of sugar in a given box? The quantity of water in a pail?

INSTRUCTION LXVII.

INCH MEASURE.

Lines, surfaces and solids are well-known things. You often wish to be able to measure them, and find out their quantity. It is done by a measure, called an inch.

An inch is a small measure of length. It is used in finding the length, breadth, or thickness of bodies.

A square inch is a measure of surfaces, and contains an inch in length and breadth.

A solid inch is a measure of solids, and contains an inch in length, breadth and thickness.

What is an inch? A square inch? A solid inch?

EXERCISE.

1. How long is this book? Table?
2. How many square inches in the back of this book? Table?
3. How many solid inches in this book?

INSTRUCTION LXVIII.

OUNCE MEASURE.

Grocers, apothecaries, and many others are dealing in bodies, and want to know their quantity. It is found out by weighing them. Weighing is a kind of measurement. The small measure of an ounce is used for this purpose.

An ounce is a small measure by which we find out the quantity of a thing by weighing it. Sugar, tea and medicines are weighed for this end. We have two kinds of ounces: the ounce Troy, and the ounce Avoirdupois.

What is an ounce?

EXERCISE.

Take up different things, and think how much they weigh—how many ounces.

INSTRUCTION LXIX.

GILL MEASURE.

Liquids, such as milk, oil, beer and wine, are not weighed. We have hollow measures by which we find out their quantity. The gill is the smallest of these.

A gill is a hollow measure by which we find the quantity of small portions of fluids.

What is a gill?

EXERCISE.

How many gills in a tumbler of water? In a pail?

INSTRUCTION LXX.

A SECOND MEASURE.

Time and motion are measured in another way. A watch or pendulum is used to find out their quantity. A second is the smallest measure, as the swing of a pendulum.

A second is a small measure of time and motion. It is known by the swing of a pendulum. This is a second. Minutes, hours and days are used for measuring large portions of time.

What is a second?

EXERCISE.

Try and count seconds.

INSTRUCTION LXXI.

A CENT MEASURE.

We wish to do more with bodies, my son, than find their quantity. We wish to find their *value.* When Robert bought an orange the other day, you asked me what he paid for it. One cent, was my answer. This was its value.

The value of things is expressed in money. The cent is the smallest coin used in this country. It is made of copper. Other kinds of coins are made of silver or gold.

A cent is a small copper coin by which we value small or cheap things.

What is a cent?

EXERCISE.

What is an apple worth? Your toy book? A slate? John's work for one day?

INSTRUCTION LXXII.

A UNIT.

You and I, my son, can talk about measures. We can use *words* to say how many. We can also use words when we write about them. Thus, two ounces, and four ounces. This would soon become troublesome. Instead of words, we use certain marks. Thus, for the word, ONE, we use the mark, 1. This mark is called a unit.

A unit is the sign of any single thing. It may be an ounce, gill or cent.

What is a unit? Write it.

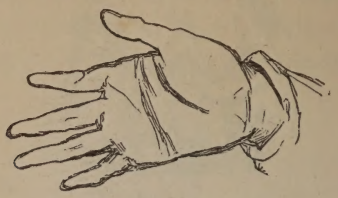
INSTRUCTION LXXIII.

THE ALPHABET OF QUANTITY.

The alphabet of words, or language, contains twenty-six letters. Out of these we make all words.

The alphabet of quantity contains only two figures, 1 and 0, which are read, one and naught. The naught is nothing,

and is used to fill up places. Out of these two figures, all numbers are formed. The first nine are marks which stand for groups of units. These are often called digits, from the fingers. Thus, 2 stands for a group of units, &c.



I. II. III. IIII. IIIII. IIIIII. IIIIIII. IIIIIIII. IIIIIIIII.
1, 2, 3, 4, 5, 6, 7, 8, 9.

All others are formed by combining these and the naught. Thus, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21.

TENTH PART.

PROPERTIES OF BODIES—POWER.

PROPERTIES OF BODIES — POWER.

INSTRUCTION LXXIV.

POWER.

Think, my son, of the changes which take place around us. The sun rises and sets, trees put on their dress of leaves and put it off again, storms rage in the heavens and are followed by calms, houses are reared and pulled down, man is born and dies. How many things happen daily! And why? Power is at work.

Power is that on which events depend. It is the cause of

all change, and occurs in various forms. The boiling of a kettle is an event, and depends on fire.

Fire produces steam, a great power.

What is power?

EXERCISE.

Point out instances of power. Name what it has done.

INSTRUCTION LXXV.

MECHANICAL POWERS.

Man, my son, is not able with his head and hands alone to do all that he wishes. He is not able, for instance, to pry up rocks, lift large weights, such as barrels, to the second story of a house, or split logs of wood. He does things by the aid of machines. These are called mechanical powers.

A mechanical power is a machine with which man overcomes difficulties, and does what he could not do with his hands. There are five principal ones. Out of these, all others are made.

What is a mechanical power?

EXERCISE.

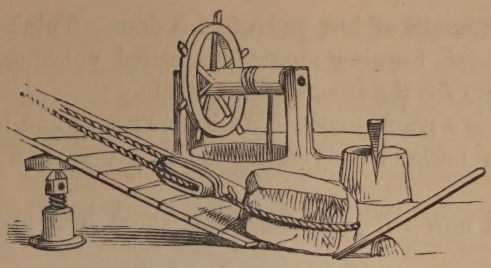
1. Name some mechanical powers.
2. Name something that is done by them.

INSTRUCTION LXXVI.

THE FIVE MECHANICAL POWERS.

The five mechanical powers are as follows: the *lever*, *pulley*, *wheel* and *axle*, *inclined plane*, and *wedge*, as seen in the plate.

They are very useful. The LEVER may be seen in a crow-bar or pair of scissors, the PULLEY in the tackle with which merchants lift goods to the second or third story; the WHEEL and AXLE in the windlass attached to some



wells; the INCLINED PLANE in hills and beds of rivers, and the WEDGE in a knife or axe.

You will understand them best by seeing them and observing how they work.

EXERCISE.

1. Point out the five mechanical powers.
2. Point out also what each of them does.

INSTRUCTION LXXVII.

NATURAL POWERS.

The world, my son, is full of power. The winds are at work, the water is flowing, fire is burning, and the great sun is warming the earth. These are natural powers.

A natural power is that on which events in nature depend. Day, for instance, depends on the rising of the sun.

What is a natural power?

EXERCISE.

Name some natural powers.

INSTRUCTION LXXVIII.

HEAT AND COLD.

Heat and cold, my son, are well-known powers. Think

of the strength of fire, and what it does. Think of earthquakes and burning mountains, called volcanoes. How strong too are the beams of the sun!

Frost is a giant power. He chains ponds and lakes, and throws a bridge over rivers. Rocks are rent in pieces by cold.

I will now tell you something about heat and cold as powers.

Heat is that which expands all bodies, and gives us fluids and vapors. It is known in the sensation of heat. Without it, the world would be a frozen mass.

Cold is only that degree of heat which is not sensible. It is heat that is not felt.

What is heat? What is cold?

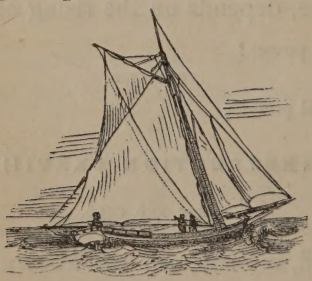
EXERCISE.

1. By what sense is heat and cold known?
2. Name degrees of heat. Of cold.

INSTRUCTION LXXIX.

THE ATMOSPHERE.

The atmosphere, my son, is known to you.. You know it in winds and storms. You have heard of it as that which makes waves, turns windmills, and drives ships over the oceans. It is a great power.



The atmosphere is a springy fluid body that surrounds the earth. It extends about fifty miles above it, and presses on every square inch with the weight of fifteen pounds.

What is the atmosphere?

EXERCISE.

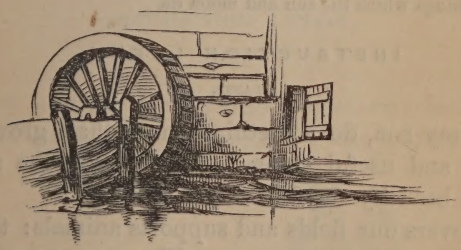
Name some things that the atmosphere as a natural power does.

INSTRUCTION LXXX.

WATER.

Water, my son, is as well known to you as the atmosphere. It is a great power. Think of the waves of the sea. Think of the ocean in a storm. Ships are upheaved, and tossed about like feathers.

You know also that it is a gentle power. The brook cools the air and waters the roots of the forest trees: the rain slakes the thirst of the earth. The dew-drop is one of the gentlest of things. As a power it is seen in turning a wheel.



Water is a fluid that exists in large quantities in basins on the surface of the earth. It is very useful to man, and is found solid, fluid and in vapor. When turned into steam by fire, it moves our steamboats and rail-road cars.

What is water?

EXERCISE.

Name things that water does.

INSTRUCTION LXXXI.

HEAVENLY BODIES.

The sun and moon, my son, are mighty powers. You know something about them. They light our world by day and night. The sun warms it, and by his light and heat, keeps life and beauty in the world.

They are mighty powers. Their strength may be seen in the tides. They lift up the water of the seas into great heaps, and make the ocean roll in vast waves round the world.

What makes tides?

EXERCISE.

Point out things which the sun and moon do.

INSTRUCTION LXXXII.

PLANTS.

Plants, my son, do something more than grow. They are active and useful things. They purify the air: they clothe and beautify the face of the earth.

Grass covers our fields and supports animals: the sugar-cane yields sugar for our use. There are trees in some parts of the world that supply man with milk and bread. You know how much we depend on vegetables and fruits. Plants are useful natural powers.

EXERCISE.

Point out things that plants do, living or dead.

INSTRUCTION LXXXIII.

ANIMALS.

Animals, my son, are more active than plants. They are useful powers. Think of what the cow and the horse do. Think too of the gentle sheep. The song of the bird does good. Even the red earth-worm is useful. It dresses the soil of our old fields and make it rich and fine. Every living creature is a thing of power. The horse is a good instance.

EXERCISE.

Name some animals, and state what they do.

INSTRUCTION LXXXIV.

MAN.

Man, my son, is the greatest power on earth. He is strong in himself. He is stronger by his knowledge. By

wisdom, he clothes himself in all other powers. He makes the water turn his mills, steam drive his machines, and the lightning carry his messages.

Man is strong. He has changed the whole face of the earth. Cities exist where once was found the old woods.

EXERCISE.

1. Name some events that man has produced.
2 Name other events, and tell how man brings them to pass.

ELEVENTH PART.

MAN.

MAN.

INSTRUCTION LXXXV.

MAN.

Man, my son, is a very great being. I must tell you something about him. In early life, he eats, drinks, and sleeps like an animal; in after life, he thinks, reasons, and worships like an angel. He is near to you. He is very strong and wise. The wild beasts fly before him: the winds, waves, and lightning do his will. How is this?

Man is the visible image of God on earth. As such, he walks up and down the world, and has power over all things.

What is man?

EXERCISE.

Tell me what you know about man, as ruler of things. Of animals. Winds. Waves. Lightning.

INSTRUCTION LXXXVI.

BODY OF MAN.

The body of man is wonderfully made, my son. There is nothing in the world so fair. It unites all beauties—beauty of form, of color, of motion, of sound, of expression. The face is turned toward heaven, and appears as something divine.

The body of man is the movable habitation of the soul. It is the soul's house.

What is the body of man?

EXERCISE.

Can you see any thing of the soul in the eye? in the ear? in the tongue?

INSTRUCTION LXXXVII.

THE SOUL OF MAN.

The soul, my son, is more wonderful than the body. It is known partly in speech, partly in works, but best of all in *thinking*. We look within us, to know the soul. I have done so. We feel it when we gaze upon the sleeping body.

The soul is that within us which thinks, feels, acts, and is accountable. The child accounts to his parent or teacher: all will give an account to God. The soul is so great, that there is not any thing great enough for it to worship but God. Thought, play, action, and rest, reveal the soul. It is seen in the book and toy, and is with the body in sleep.

What is the soul?

EXERCISE.

Do you learn any thing of the soul from the face? Speech? Life?

INSTRUCTION LXXXVIII

THE MIND.

The soul, I have told you, my son, is something within you. It thinks. I can see that it listens at the ear, and looks forth out of the eye. It asks questions, and wishes to know the names and uses of things. *It thinks.* When it does so, we call it MIND.

Mind is that which knows; as a child mending his hoop. It is seen in various aspects, as it tries to know things. I will name them: sensation, attention, apprehension, imagination, perception, conception, judgment, abstraction, and reason.

What is mind?

EXERCISE.

Name something that belongs to the mind.

INSTRUCTION LXXXIX.

THE HEART.

The soul, my son, does something more than know things. When your mamma goes away, you feel it, and are sorrowful. When she returns, you feel it, and are glad. The soul feels things. When it does so, we call it heart.

Heart is that which feels. It is known in sorrow, or j r

or hope, or fear, or anger, or love. The feelings of the soul are very numerous. A child, in joy beholding the rising moon, is an instance.

What is heart?

EXERCISE.

1. Name some feelings of the heart.
2. Name some feelings, and tell me what you know about them.

INSTRUCTION XC.

THE CONSCIENCE.

The soul, my son, feels a great many things. It feels something when the cold winds blow, or the thunder roars, or the body is sick, or the toy is broken, or when mamma frowns. It feels right and wrong. When it does so, we call it conscience.

Conscience is that which feels right or wrong. It is one of the feelings of the heart—the greatest of feelings. A child reproved, or asking pardon, is an instance.

What is conscience?

EXERCISE.

1. Name some things in which you felt your conscience at work.
2. How does it work?

INSTRUCTION XCI.

THE WILL.

The soul, my son, does more than know and feel things.

It acts. It plans, and carries out our thoughts and feelings into the life. You know and feel, for instance, that there is pleasure in a ride. You are joyous, when you think of taking one. You resolve to go, and get ready. When you do so, you will.

The will is that which carries out our thoughts and feelings to some end. It gives shape to our wishes; as may be seen in a child building a block house.

What is will?

EXERCISE.

1. Name some instances where you will.
2. Do you will when you walk? Lift your arm? Write? Speak?

INSTRUCTION XCII.

CONSCIOUSNESS.

My son, how do you know that you have a soul, and that it thinks, feels, wills, and acts? How? You know that there is a world by your senses. You hear, see, taste, smell, and touch it. The senses tell you nothing about the soul.

You know it by an internal sense. We call it consciousness. *Consciousness is the internal sense by which we know there is a soul, and what it does.*

What is consciousness?

EXERCISE.

1. Think now what is going on within you.
1 How do you know when you are sorrowful? Joyous? Afraid?

TWELFTH PART.

GOD.

GOD.

INSTRUCTION XCIII.

GOD.

GOD existed when there were no sun, moon, earth or stars. There never was a time when he did not exist. God is a great being. He is wiser than all the angels, stronger than all the angels, holier than the angels. He is not like any thing that you hear, or see, or touch, or taste. The soul is the only thing in the world that has any likeness to God.

God is a wise, powerful, good, just, holy, and merciful spirit, filling heaven and earth with his fulness.

What is God?

INSTRUCTION XCIV.

GOD IN HIS WORKS.

GOD made all the angels, and all the people that have ever lived. He made the sun, moon, stars, and the earth. Without him, was not any thing made, which was made. He makes the spring, summer, autumn, and winter: the days and nights. He causes the winds to blow, the rivers to run, the waves to ebb and flow, the trees to blossom, and the fruit and grain to ripen.

God takes care of every thing. He is the Father of all, and watches over all.

We can trace him in his works, as we trace the hand of a painter in a picture, or the maker of a book, in a book. We can trace God as maker and ruler in the earth and heavens.

How can we trace God in his works?

INSTRUCTION XCV.

GOD, IN HIS PROVIDENCE.

The world, my son, and all that it contains are upheld by God. He preserves all things. He guides the stars, paints the flowers, makes day and night, and brings on the seasons. He rules the world as a father rules a family, and is known by what he does.

God is known in his government of the world as powerful, wise, good, and just. He is pleased with goodness and punishes evil.

How is God known in the government of the world?

EXERCISE.

1. Point out things where God governs.

2. Point out instances where he is pleased with goodness. Where he punishes evil.

INSTRUCTION XCVI.

GOD IN THE BIBLE.

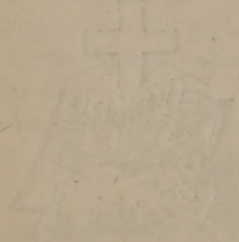
The world, my son, does not tell us all we wish to know about God. It tells us nothing about pity. The Providence or government of God, does not tell us all. It tells us nothing about FORGIVENESS—poor wanderers brought home, and made good and happy again. The Bible alone tells us about such things. It speaks of God, the Redeemer.

The Bible tells us a great secret about God. It tells us that he is in Christ pardoning poor sinners. It tells us how we may reach heaven, when we die.

The Bible is like a far-seeing glass put before the eye. It shows us things afar off. It shows us the world to come. It speaks too, about a day, when all the graves will give up their dead, and when every human being will stand before God's judgment bar. The Bible account of God is precious to every good being.

EXERCISE.

1. How has God the Redeemer appeared in the world?
2. What has he done for man?
3. What is he still doing?



THIRTEENTH PART.

THE CLOSE.

THE WORLD AND IMMORTALITY.

INSTRUCTION XCVII.

THE CLOSE.

The child, my son, commonly brings home some things from his rambles—violets, pebbles, or nuts. You, I hope, have brought home something far better. Let us look at them!

First Thoughts! Ah! Well, they are not so sweet as violets, but they are more useful. They are the seeds of all knowledge. By and by, you will begin to gather up their harvest.

Try now and recall them. Do so under each part. Recall them as you would recall different stages in a long journey. This will be a useful exercise. It is looking back upon the path we have trod together and gathering up its happy things. But be careful to NAME *the thought*, and then *tell what you know about it.*

PART I.—INTRODUCTION.

Instructions: The Beginning—The World—I—God—First Thoughts.

PART II.—THE SENSES.

Instructions: The Five Senses—Touch—Taste—Smell—Hearing—Sight—Union of the Senses—Of Touch and Sight—Of Touch and Hearing—Of Smell, Touch, and Taste—Of Hearing and Sight—Of all the Senses.

PART III.—ORGAN OF VOICE.

Instructions: The Voice—The Air—The Lungs—The Wind-Pipe—The Larnyx—The Mouth—The Organ of Voice.

PART IV.—BODIES.

Instructions: Bodies—Objects—Kinds of Bodies—A Mineral Body—A Vegetable Body—An Animal Body—Instruments—Works of Man—Place—Agents—Events—Time.

PART V.—PROPERTIES OF BODIES.

Instructions: Properties—Sensible Properties—Properties not Sensible—Existence—Order—Resemblance—Power—Motion—Beauty.

PART VI.—SOUND.

Instructions: Sound—Tone—Pitch—Force—Length of Tone—Flat and Sharp Tones.

PART VII.—LIGHT AND COLOR.

Instructions: Light—Colors—The Simple Colors—Compound Colors—The Colors of the Rainbow—White and Black.

PART VIII.—FORM.

Instructions: Form—Point—Lines—Surfaces and Solids—Kinds of Lines—Angles—Figures—Kinds of Figures.

PART IX.—QUANTITY.

Instructions: Quantity—Measure of Quantity—Inch Measure—Ounce Measure—Gill Measure—A Second Measure—A Cent Measure—A Unit—The Alphabet of Quantity.

PART X.—POWER.

Instructions: Power—Mechanical Power—The Five Mechanical Powers—Natural Powers—Heat and Cold—The Atmosphere—Water—Heavenly Bodies—Plants—Animals—Man.

PART XI.—MAN.

Instructions: Man—Body—The Soul—The Mind—The Heart—The Conscience—The Will—Consciousness.

PART XII.—GOD.

Instructions: God—God, the Maker—God, the Ruler—God, the Redeemer.

INSTRUCTION XCVIII.

THE WORLD AND IMMORTALITY.

The earth, my son, is beneath us: the heavens are above us. Books are the symbols of the soul; and the censer, the sign of its immortality. These are the materials of our *first thoughts.*

But you know little about them. You are like a child, who has pulled a leaf-bud, and knows nothing of the flower and the ripe fruit.

Already you have returned back to go forth again from home. STEPS IN THINKING are to be taken—the world and immortality are to be known. You are still at the beginning.

THE END.

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HAND-BOOK OF ANGLO-SAXON DERIVATIVES.—In this book, the child is made acquainted with *five thousand Anglo-Saxon derivatives*, and their primary and secondary meanings. They are formed from the *one thousand* root-words of the first Hand-Book by some *fifty* suffixes and prefixes. They are grouped like the root-words, and their use taught in the formation of sentences.

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The line of thought is the natural growth of the mind in becoming acquainted with the various objects of inquiry.

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These are all the books that the Association is prepared at present to bring before the public. The American System is, however, to be complete. For PARTICULARS, the Publisher refers to the Introductions to the several books. Only one of the books now ready has been submitted to the inspection of teachers and literary gentlemen, and the notice of the press—the Hand-Book of Anglo-Saxon Derivatives. It has been introduced into Rutgers Institute and Spingler Institute, the Public and Private Schools of Newark, and many other Institutes. Some of the notices of this book are presented below.

OPINIONS OF EMINENT EDUCATORS AND LITERARY GENTLEMEN.

"It appears in a small compass to contain much interesting and useful information, and to promise to be of great service in imparting a fuller and more exact knowledge of our language than is usually obtained."—*Prof. Johnson, of the New-York University.*

"It occupies ground which has never been trodden before by any book-maker. I shall immediately introduce it into my school."—*C. Butler, Somerset Young Ladies' Institute.*

"Every practical teacher has felt the necessity of some work to aid him in teaching the knowledge of words. It is only remarkable that such a work should not have been produced sooner."—*J. B. Thompson, Somerville, N. J*

Published by A. Montgomery, 17 Spruce st., New-York.

THE ENGLISH LANGUAGE.

From the Christian Intelligencer.

THE Editor of the Brooklyn *Daily Eagle* newspaper, of March 2, states that the following letter from the Rev. Dr. Scott, of Newark, N. J., was presented to the Board of Education of the City of Brooklyn, at the regular meeting of the Board on the 1st, and that on being read it was referred to the School-book Committee.

We sincerely agree with the Editor, "in thinking that the letter will attract the particular attention of scholars, and be read with interest by all classes."

We rejoice to know that Dr. Scott is connected with a Literary Association which is laboring to advance the interests of education, and especially the study of our mother-tongue. It seems to us that they have struck the proper chord, in calling attention to the Anglo-Saxon element of the English language, as the primary and most important element.

TO THE BOARD OF EDUCATION OF THE CITY OF BROOKLYN, N. Y.

GENTLEMEN,—A Literary Association, composed of gentlemen of large experience in teaching, present the accompanying three volumes for your consideration.

The Association believe that their introduction into the public and private schools of the Republic will greatly promote the study of the English language.

The Association think that the present method of teaching the English language is not the natural one. These are their reasons:

1. The English language is a mixed, or composite one, having at least five lingual elements: the Anglo-Saxon, the Gothic, the Celtic, the French, and the Classic, or Latin and Greek.

2. In 450, when the English language was introduced into Great Britain, it had only one of these elements—the Anglo-Saxon. This element is, therefore, the basis of the language. It embraces twenty-three thousand words, some five or six thousand of which are the choice words of daily speech; such as the words of home, of the heart, of the counting-room, of the workshop, and of farming.

3. The Gothic, French, Celtic, Latin, and Greek words, have been introduced as civilization has progressed. The French language gave the words of refinement, chivalry, law, and some of the fine arts. The Gothic gave words of similar import with the Saxon, which is one of the Gothic dialects. The Latin and Greek languages gave abstract, scientific, and theological words.

4. The Anglo-Saxon element has received the other elements from time to time since 450, and given them its own laws. Hence, the grammatical structure of the English language is based on the Saxon, and not on the Latin or Greek.

In view of these reasons, the Association believes that the true method of studying the English language is that of beginning with the Saxon, or first lingual element. After this has been mastered, then proceed to the study of the other elements, in the order of their engrafture or introduction into the English language.

The three HAND-BOOKS present the English language according to this order. The first, or ANGLO-SAXON WORD-BOOK, gives a thousand of the choice root-words of the Anglo-Saxon element, with their primitive and secondary meanings. The pupil can master this book in three months.

The second book, or HAND-BOOK OF ANGLO-SAXON DERIVATIVES, gives five thousand of the best Anglo-Saxon words. The root-word is given, then its derivatives, with their meanings and use. But as all the derivative words are formed by adding twenty-five suffixes, eighteen prefixes, and nine terminations, to the root-words, these fifty-two suffixes, prefixes, and terminations, are explained in the first part of the book. This Hand-book can be studied in three months, and will put the child in possession of five thousand of the best Anglo-Saxon words in the English language, with their meanings and use.

The third book, containing the engrafted elements of the English language, gives some seven thousand of the best words from the Gothic, Celtic, French, and Classic elements, with their meanings and use. Six months will be long enough for the child to acquire its contents. Thus, at the end of twelve months, the faithful pupil will be in possession of twelve thousand of the choicest words in the English language.

Besides this order in the study of the lingual elements of our language, the Literary Association calls your attention to the classification of the words in each of the books. It is the

only natural classification of words, and is in accordance with the known laws of mental association. For instance, under the head of MAN, all words relating to the body and soul of man are arranged. So also under the head of BUSINESS, all the words for the various sorts of business are grouped.

These three volumes, THE ANGLO-SAXON BOOK OF ROOT-WORDS, THE HAND-BOOK OF SAXON DERIVATIVES, and THE HAND-BOOK OF ENGRAFTED WORDS, place the English language within the reach of all our youth. The plan embraced in them has received the sanction of our first teachers. The practicability of the plan is settled. Several of the highest schools in New-York City and vicinity have introduced, or are about introducing the series. Among these institutions are the Rutgers and Spingler Institutes.

With these statements, the Literary Association commends the works to your favorable notice, believing that they will prove themselves to be valuable contributions to school literature. By order of the Literary Association,

JAMES SCOTT.

NEWARK, N. J., 1st March, 1853.

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